



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,543	04/11/2001	Erik D. Lindskog	A-69116/AJT	4785

7590 02/22/2006

FLEHR HOHBACH TEST
ALBRITTON & HERBERT LLP
Suite 3400
Four Embarcadero Center
San Francisco, CA 94111-4187

EXAMINER

WANG, TED M

ART UNIT PAPER NUMBER

2634

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/833,543	Applicant(s) LINDSKOG ET AL.	
	Examiner Ted M. Wang	Art Unit 2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01/11/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-10, 15-20, 22- 25, 27, and 37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-10, 15, 17-20, 22, 24, 25, 27 and 37 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 16 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's amendments and arguments, filed 1/20/2006, with respect to Claims 1, 11-14, 28-36, 37-43 have been fully considered and are persuasive. The applicant cancels Claims 1, 11-14, 28-36, 38-43 to overcome the rejection under 35 USC § 112 first paragraph, and amended Claim 37 by rewritten it in independent form including all of the limitations of the base claim to overcome the objection.

Claim Objections

2. Claims 16 and 23 are objected to because of the following informalities:

- Claims 16 and 23, line 2, after "symbols" insert --- of the signal ---.

Appropriate correction is required.

Allowable Subject Matter

1. Claims 16 and 23 would be allowable if rewritten to overcome the objection(s) set forth in this Office action.

3. Claims 2-10, 15, 17-20, 22, 24, 25, 27, and 37 are allowed.

4. The following is an examiner's statement of reasons for allowance.

- The prior art fails to teach an apparatus of Claims 2, 4, 15, 19, and 37 that specifically comprises the following:

-- The instant application is deemed to be directed to a non-obvious improvement over the admitted prior art of the instant application and the invention patented in Pat. No. 6,128,351, 6,594,226, 6,697,641 and Ariyavisitakul, "A Decision Feedback Equalizer with Time-Reversal

Structure", IEEE Journal on selected area in communications, vol. 10, No. 3, April 1992. The improvement comprises-

With regard claims 2 and 4, "some of the symbols in at least one of the symbol sequences are negated, and during the first block of the transmission frame, applying the first symbol sequence to a first antenna and the second symbol sequence to a second antenna and during the second block of the transmission frame applying the fourth symbol sequence to the first antenna and the third symbol sequence to the second antenna." as recited,

With regard claims 15 and 19, "to transmit through the second antenna (group) a time reversed and complex conjugate form of the first symbol stream during a second block of the transmission frame, and to transmit through the first antenna (group) a time reversed, complex conjugate and negated form of the second symbol stream during the second block of the transmission frame." as recited, and

With regard claim 37, "each of the first and second symbol streams and that correlation between symbols close to each other in each of the first and second symbol streams is not significantly effected; and processing the plurality of symbol streams before transmitting each symbol stream through a channel, wherein processing the plurality of symbol streams comprises time-reversing at least one of the symbol

streams before transmitting the at least one of the processed symbol streams." as recited.

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6. This application is in condition for allowance except for the following formal matters:

The claims 16 and 23 are objected by the examiner.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is 571-272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2634

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ted M Wang
Examiner
Art Unit 2634

Ted M Wang
February 14, 2006


CHIEH M. FAN
SUPERVISORY PATENT EXAMINER